

### **Amendment to the Claims**

Kindly cancel claims 1-49 and add claims 50-97, as set forth below. In compliance with the Revised Amendment Format published in the Official Gazette on February 25, 2003, a complete listing of claims is provided herein. The changes in the amended claims are shown by strikethrough (for deleted matter) and underlining (for added matter).

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50. (New) A method of managing processing groups of a distributed computing environment, said method comprising:
  - requesting via a request by a prospective member to join a processing group of the distributed computing environment, said request including a sequence number indicating a version of the processing group;
  - determining whether the prospective member can join the processing group, said determining employing the sequence number; and

joining the processing group by the prospective member, in response at least in part to the determining indicating that the prospective member can join the processing group.

51. (New) The method of claim 50, further comprising updating state associated with the processing group, in response to the request, said updating providing a current group sequence number.

52. (New) The method of claim 51, further comprising quiescing activity that may affect the state prior to said updating.

53. (New) The method of claim 51, wherein the determining comprises comparing by said prospective member the sequence number in the request with the current group sequence number to determine if the join should continue.

54. (New) The method of claim 53, wherein the joining comprises reinitializing state of the prospective member to make the prospective member consistent with an existing member of the processing group.

55. (New) The method of claim 54, wherein the reinitializing is performed, in response to the comparing indicating that the sequence number in the request is less than the current group sequence number.

56. (New) The method of claim 54, further comprising determining an activity status of the processing group prior to the reinitializing, wherein the reinitializing is performed if the processing group is active.

57. (New) The method of claim 54, wherein the joining further comprises updating the current group sequence number.

58. (New) A method of managing processing groups of a distributed computing environment, said method comprising:

initiating by a prospective member of an active processing group an admission protocol to enable the prospective member to join the processing group, said admission protocol comprising:

requesting via a request by the prospective member to join the processing group, wherein the request to join includes a sequence number indicating a version of the processing group;

updating state associated with the processing group, in response to the request, said updating providing a current group sequence number;

comparing by said prospective member the sequence number in the request with the current group sequence number;

reinitializing state of the prospective member, in response to the comparing indicating a particular difference, to make the prospective member consistent with an existing member of the processing group;

updating the current group sequence number; and

concluding the admission protocol, wherein the prospective member has joined the processing group.

59. (New) A method of managing processing groups of a distributed computing environment, said method comprising:

joining a prospective member to an inactive processing group;

comparing a sequence number of the processing group with a sequence number of the prospective member;

updating the sequence number of the processing group, in response to the comparing indicating a particular difference;

determining whether a quorum of members has joined the processing group;

setting the sequence number of the processing group, in response to the determining indicating a quorum; and

initiating activation of the processing group, in response to the setting.

60. (New) The method of claim 59, wherein the initiating activation comprises:

obtaining by a member of the processing group having a sequence number lower than the sequence number of the processing group a copy of group state associated with the sequence number of the processing group; and

reinitializing the member using the copy of group state.

61. (New) The method of claim 59, wherein activation of the processing group comprises updating the sequence number of the processing group.

62. (New) The method of claim 61, wherein the updating of the sequence number of the processing group comprises updating the sequence number, in response to there being a majority of members in the processing group.

63. (New) A method of managing processing groups of a distributed computing environment, said method comprising:

detecting a failure of a member of a processing group of the distributed computing environment; and

excluding the failed member from the processing group, in response to the detecting, wherein the excluding comprises updating a sequence number of the processing group to exclude the failed member, the sequence number identifying a version of the processing group.

64. (New) The method of claim 63, further comprising quiescing updates to distributed state of the processing group, in response to the detecting.

65. (New) The method of claim 63, wherein the excluding is performed if the processing group is active and retains a majority of its members.

66. (New) A system of managing processing groups of a distributed computing environment, said system comprising:

a request by a prospective member to join a processing group of the distributed computing environment, said request including a sequence number indicating a version of the processing group;

means for determining whether the prospective member can join the processing group, said means for determining employing the sequence number; and

means for joining the processing group by the prospective member, in response at least in part to the determining indicating that the prospective member can join the processing group.

67. (New) The system of claim 66, further comprising means for updating state associated with the processing group, in response to the request, said updating providing a current group sequence number.

68. (New) The system of claim 67, further comprising means for quiescing activity that may affect the state prior to said updating.

69. (New) The system of claim 67, wherein the means for determining comprises means for comparing by said prospective member the sequence number in the request with the current group sequence number to determine if the join should continue.

70. (New) The system of claim 69, wherein the means for joining comprises means for reinitializing state of the prospective member to make the prospective member consistent with an existing member of the processing group.

71. (New) The system of claim 70, wherein the reinitializing is performed, in response to the comparing indicating that the sequence number in the request is less than the current group sequence number.

72. (New) The system of claim 70, further comprising means for determining an activity status of the processing group prior to the reinitializing, wherein the reinitializing is performed if the processing group is active.

73. (New) The system of claim 70, wherein the means for joining further comprises means for updating the current group sequence number.

74. (New) A system of managing processing groups of a distributed computing environment, said system comprising:

means for joining a prospective member to an inactive processing group;

means for comparing a sequence number of the processing group with a sequence number of the prospective member;

means for updating the sequence number of the processing group, in response to the comparing indicating a particular difference;

means for determining whether a quorum of members has joined the processing group;

means for setting the sequence number of the processing group, in response to the determining indicating a quorum; and

means for initiating activation of the processing group, in response to the setting.

75. (New) The system of claim 74, wherein the means for initiating activation comprises:

means for obtaining by a member of the processing group having a sequence number lower than the sequence number of the processing group a copy of group state associated with the sequence number of the processing group; and

means for reinitializing the member using the copy of group state.



76. (New) The system of claim 74, wherein activation of the processing group comprises means for updating the sequence number of the processing group.

77. (New) The system of claim 76, wherein the means for updating of the sequence number of the processing group comprises means for updating the sequence number, in response to there being a majority of members in the processing group.

78. (New) An article of manufacture comprising:

at least one computer usable medium having computer readable program code logic to manage processing groups of a distributed computing environment, the computer readable program code logic comprising:

a request by a prospective member to join a processing group of the distributed computing environment, said request including a sequence number indicating a version of the processing group;

determine logic to determine whether the prospective member can join the processing group, said determining employing the sequence number; and

join logic to join the processing group by the prospective member, in response at least in part to the determining indicating that the prospective member can join the processing group.

79. (New) The article of manufacture of claim 78, further comprising update logic to update state associated with the processing group, in response to the request, said updating providing a current group sequence number.

80. (New) The article of manufacture of claim 79, further comprising quiesce logic to quiesce activity that may affect the state prior to said updating.

81. (New) The article of manufacture of claim 79, wherein the determine logic comprises compare logic to compare by said prospective member the sequence number in the request with the current group sequence number to determine if the join should continue.

82. (New) The article of manufacture of claim 81, wherein the join logic comprises reinitialize logic to reinitialize state of the prospective member to make the prospective member consistent with an existing member of the processing group.

83. (New) The article of manufacture of claim 82, wherein the reinitializing is performed, in response to the comparing indicating that the sequence number in the request is less than the current group sequence number.

84. (New) The article of manufacture of claim 82, further comprising determine logic to determine an activity status of the processing group prior to the reinitializing, wherein the reinitializing is performed if the processing group is active.

85. (New) The article of manufacture of claim 82, wherein the join logic further comprises update logic to update the current group sequence number.

86. (New) An article of manufacture comprising:

at least one computer usable medium having computer readable program code logic to manage processing groups of a distributed computing environment, the computer readable program code logic comprising:

join logic to join a prospective member to an inactive processing group;

compare logic to compare a sequence number of the processing group with a sequence number of the prospective member;

update logic to update the sequence number of the processing group, in response to the comparing indicating a particular difference;

determine logic to determine whether a quorum of members has joined the processing group;

set logic to set the sequence number of the processing group, in response to the determining indicating a quorum; and

initiate logic to initiate activation of the processing group, in response to the setting.

87. (New) The article of manufacture of claim 86, wherein the initiate logic comprises:

obtain logic to obtain by a member of the processing group having a sequence number lower than the sequence number of the processing group a copy of group state associated with the sequence number of the processing group; and

reinitialize logic to reinitialize the member using the copy of group state.

88. (New) The article of manufacture of claim 86, wherein activation of the processing group comprises update logic to update the sequence number of the processing group.

89. (New) The article of manufacture of claim 88, wherein the update logic to update the sequence number of the processing group comprises update logic to update the sequence number, in response to there being a majority of members in the processing group.

90. (New) An article of manufacture comprising:

at least one computer usable medium having computer readable program code logic to manage processing groups of a distributed computing environment, the computer readable program code logic comprising:

detect logic to detect a failure of a member of a processing group of the distributed computing environment; and

exclude logic to exclude the failed member from the processing group, in response to the detecting, wherein the excluding comprises updating a sequence number of the processing group to exclude the failed member, the sequence number identifying a version of the processing group.

91. (New) The article of manufacture of claim 90, further comprising quiesce logic to quiesce updates to distributed state of the processing group, in response to the detecting.

92. (New) The article of manufacture of claim 90, wherein the excluding is performed if the processing group is active and retains a majority of its members.